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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,431	07/27/2006	Hikaru Kai	09864/0207778-US0	4903

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EXAMINER	
BLUMEL, BENJAMIN P	
ART UNIT	**PAPER NUMBER**
1648	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,431	KAI ET AL.	
	Examiner	Art Unit	
	BENJAMIN P. BLUMEL	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/9/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicants are informed that the rejections of the previous Office action not stated below have been withdrawn from consideration in view of the Applicant's arguments and/or amendments.

Claims 1-3 and 7 are examined on the merits.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 2/9/09 was filed after the mailing date of the non-final Office action on 10/14/2008. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Response to Arguments

Applicant's arguments filed 1/14/09 have been fully considered but they are not persuasive. See responses below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

(New Rejection Necessitated by Amendments) Claims 1-3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kistner et al. (Developments in Biological Standardization, 1999), Wang and Ouyang (Bioprocess Engineering, 1999) and Kobatake et al. (Biotechnology Techniques, 1999).

The claimed invention is drawn a method of producing a virus comprising: adhering adhesive cells to a microcarrier which has a polypeptide (P) having 4 to 50 cell-adhesive minimum amino acid sequences (X) per molecule and 4 to 51 auxillary amino acid sequences (Y), and is free from animal-origin components; culturing the adhesive cells in a medium free from animal-origin components; subculturing the cultured adhesive cells using a cell dispersing agent free from animal- origin components; and then inoculating and proliferating a virus in the cells obtained by culturing the adhesive cells. The virus produced belongs to at least one selected from a group consisting of *Flaviviridae, Orthomyxoviridae, Adenoviridae, Herpesviridae, Picornaviridae, Paramyxoviridae, Togaviridae, and Poxviridae*. In the present invention, "free from animal origin components" means free from components originated from homoeothermic animals, in particular, animals such as mammals (for example, human, cattle, pig, dog, rabbit, cat, and the like), birds, and fishes. *See page 4 lines 1-3 of specification).*

Kistner et al. teach producing influenza viruses in Vero cells attached to microcarriers (Cytodex-3) which contain denatured collagen (a natural cell binding protein) [as evidenced by Wang and Ouyang, page 207] with serum-free media. However, even though collagen is a protein of animal origin, the denatured form of the collagen employed by Kistner et al. is structurally distinct from that of a naturally occurring collagen molecule and therefore not of animal origin. However, Kistner et al. do not teach the involvement of an auxillary amino acid sequence as part of the polypeptide (P) which as defined in the specification, aids in the thermal stability of P. *See pages 103, 106 and table 5.*

Kobatake et al. teach how to introduce specific amino acids residues into a cell attachment protein for adhering cells in tissue culture protocols. These residues (APGVGV)

improve the stability of the attachment protein as demonstrated by retaining over 90% of its cell adhesion properties following autoclave treatment, while fibronectin lost approximately 50% of its binding capability under the same conditions. Therefore, Kobatake et al. provide an improve tissue culture method that would allow for maintaining cell adherent surfaces following extreme temperature conditions. *See page 24 and figure 3.*

It would have been obvious to one of ordinary skill in the art to modify the methods taught by Kistner et al. in order to modify a cell attachment protein containing auxillary amino acid sequences, which improve thermal stability. One would have been motivated to do so, given the suggestion by Kistner et al. that the method be used to efficiently propagate viruses in microcarrier tissue cultures. There would have been a reasonable expectation of success, given the knowledge that existing cell attachment proteins can be modified by inserting short amino acid sequences resulting in an increased thermal stability, as taught by Kobatake et al. Thus the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Response to Arguments:

Applicants argue that Kistner et al. do not teach the use of auxillary amino acid sequences that aid in the thermal stability of the P protein.

In response, while Kistner et al. do not teach increasing the thermal stability by inserting certain amino acid residues, Kobatake et al. achieved an improved cell attachment protein for tissue culture applications by inserting a 6 amino acid residue oligopeptide into an existing protein resulting in increased thermal stability.

Claim Objections

(New Objection) Claim 2 is objected to because of the following informalities: claim 2 recites multiple virus families, however, each family should be in italics to reflect the correct taxonomic format. Appropriate correction is required.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN P. BLUMEL whose telephone number is (571)272-4960. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol can be reached on 571-272-1600. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stacy B Chen/
Primary Examiner, Art Unit 1648

/BENJAMIN P BLUMEL/
Examiner
Art Unit 1648